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ABSTRACT

Children's development of social problem-solving skills and the relationships of those skills to social adjustment were longitudinally investigated from kindergarten through fourth grade. Social problem-solving skills of 300 subjects from three suburban elementary schools in a middle class community in northern California were assessed each year using one of two hypothetical-reflective interview measures: one focusing on interpersonal conflicts over the use of resources; the other on problems of object acquisition and peer group entry. Measures of social adjustment were obtained from teacher ratings and classroom sociometric assessments. Findings indicated that children of both sexes became increasingly skilled at solving common interpersonal problems, with the greatest change occurring between kindergarten and second grade. Children became increasingly assertive and effective in problem-solving responses, relying more on prosocial strategies and less on aggressive strategies or giving up. Children also increased in range of responses and ability to respond with a new strategy when initial attempts failed. Finally, children improved in their understanding of problem situations and the consequences of actions, and were more likely to interpret situations in terms of the needs and feelings of those involved. (RH)

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DEVELOPMENTAL DIFFERENCES IN SOCIAL PROBLEM SOLVING AND THEIR IMPLICATIONS FOR ADJUSTMENT

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Developmental Differences in Social Problem Solving and Their Implications for Adjustment

Although many studies during the last 20 years have examined relationships between children's skill at solving interpersonal problems and their general social adjustment, developmental studies of social problem solving processes and outcomes are quite rare. A few cross-sectional studies have shown that problems in adjustment often are correlated with deficiencies in social problem solving skills (e.g., consequential thinking), and some short-term intervention studies have shown that providing training in problem solving to children with adjustment problems leads to improvements in adjustment (for reviews, see Derlak, 1983; Urbain & Kendall, 1980). Much of this research, however, has been limited to children who have been identified as having adjustment problems (e.g., Spivak & Shure, 1974), and there are many inconsistent findings concerning the manner in which problem solving skills are related to adjustment among children of different ages or with different types of adjustment problems (e.g., aggression vs. withdrawal). Consequently, we know relatively little about: (a) normative development in social problem solving; (b) the manner in which specific aspects of problem solving (e.g., use of particular types of strategies, means-ends thinking) are related to social adjustment over time; or (c) how developmental patterns of relationships between problem solving and adjustment may differ for boys and girls, or for children with different types of adjustment problems.

The present study is a longitudinal investigation of the development of social problem solving skills and their relationships to social adjustment during the period from kindergarten through fourth grade. The sample of children (total n = 300) were drawn from three suburban elementary schools in a middle class community in northern California, and served as a "no treatment"

comparison group for a similar cohort of children who received a school-based intervention program[1] as part of a larger investigation of prosocial development (see Battistich, Watson, Solomon, Schaps, & Solomon, in press). The children's social problem solving skills were assessed each year using one of two hypothetical-reflective interview measures: one focusing on interpersonal conflicts over the use of resources (administered in kindergarten, second, and fourth grades), and the other focusing on problems of object acquisition and peer group entry (administered in first and third grades). Measures of social adjustment were obtained from teacher ratings of the children in all but third grade, and from classroom sociometric assessments in third grade.

Method

Sample

The initial sample at kindergarten consisted of 148 children (70 girls and 78 boys). From kindergarten through fourth grade a total of 300 children (140 girls, 160 boys) were assessed at least once for both social problem solving and adjustment; of these, 74 children (49% of the kindergarten sample) were assessed all five years.

Measures of Social Problem Solving

The social problem solving interviews were individually administered to children during the spring of each year in a private room away from the classroom.

The first interview, administered in kindergarten, second and fourth grade, included measures of problem solving in three hypothetical situations involving conflicts with a peer. Each of the three *conflict resolution* situations involved a focal child whose use of an object or objects was interfered with by another child, both of whom were described as being of the same sex as the

subject. In one of the situations, the focal child is building something out of blocks, and the instigating child begins to work where the focal child intended to place the construction. In the other two situations, the instigating child takes something that the focal child is using. Each situation was described in the first person (i.e., "Suppose you are..."), and was accompanied by appropriate pictures. After it was clear that the child understood the situation, he or she was asked a series of open-ended questions about how the problem might be solved and why the particular approach would be chosen. Initial strategies were challenged (i.e., "Suppose that didn't work..."), and additional strategies were solicited. The entire interview was audiotaped for use in coding.

The second interview, administered in first and third grade, was Elias' (Elias, Larcen, Zlotlov, & Chinsky, 1978) *Social Problem Solving Analysis Measure* (SPSAM), which assessed problem solving in two hypothetical situations: attempting to acquire an object from a peer, and attempting to enter into play with a group of peers. Each situation was presented through a series of pictures. The child was asked to describe the situation and to suggest ways of solving the problem through a series of standard open-ended questions. At two different points in the questioning the child's suggested strategy was challenged by posing an obstacle to successful resolution. As with the conflict resolution questions, the children's responses to the SPSAM were audiotaped for use in coding.

Scoring. Three types of measures were derived from each interview. The first set, *strategy use*, assessed the child's use of each of four types of strategies in the problem situations: give up, use aggression, appeal to an authority, and use prosocial strategies (i.e., cooperate, share, suggest

compromise). The child's proportional use of each of these types of strategies was scored, as well as the number of different strategies suggested across the problem situations, and the number of times the child was able to suggest a different strategy when confronted with an obstacle (i.e., *flexibility*).

The second set of measures assessed the overall quality of the child's approach to solving the problems. Each strategy suggested by the child was rated for both *assertiveness* and *effectiveness*.[2] These ratings were then averaged across problem situations.

The third set of measures assessed *cognitive processing*. Different measures were derived from each of the two interviews. From the conflict resolution interview a single measure was scored: *consideration of other's needs* (i.e., the extent to which the child explicitly considered the needs, rights, or viewpoint of the other child while attempting to solve the problem). Three measures were scored from the SPSAM (see Elias, 1978): *interpersonal sensitivity* (understanding of the problem situation and awareness of the thoughts and feelings of the persons involved); *means-ends thinking* (planning specific steps toward resolution, considering alternative courses of action, and anticipating obstacles to and consequences of one's actions); and *outcome expectancies* (the belief that the proposed actions will lead to successful resolution of the problem).

Measures of Social Adjustment

The children's behavior was rated by their teachers in the spring of each year (except third grade). Four composite scales were constructed from these ratings: *prosocial* (willing to consider other's viewpoint when in conflict, cooperative, understands others' needs and feelings, generous, shows much concern over others' unhappiness, treats others fairly, willing to compromise,

helpful; internal consistency = .94); *aggressive* (quick to take offense, hostile and aggressive, critical of others, misbehaves, doesn't take responsibility for own misbehavior; internal consistency = .88); *withdrawn* (shy and tentative, easily dominated and taken advantage of by others; internal consistency = .64); and *competent* (admired and sought after by peers, gets along well with adults, intelligent; internal consistency = .84).

In third grade, sociometric measures of adjustment were obtained instead of teacher ratings. Children were asked to nominate up to five of their classmates in each of five situations (invite to your birthday party, work with on a class project, get help from when you are feeling sad, pick to be on your sports team, get help from when you are having problems with your schoolwork). The measures for each child were the number of nominations received in each situation, the number of different situations in which the child received a nomination, and the total number of classmates who nominated the child for at least one of the situations. Each of these measures was converted to a proportion in order to control for differences in class size.

Results

Age and Sex Differences in Social Problem Solving

Developmental differences in social problem solving were examined through a series of mixed-model (sex by grade) analyses of variance for the measures derived from each of the two interviews. Mean differences by sex and grade on these measures are summarized in Table 1.

Table 1 Here

Boys and girls generally did not differ significantly in social problem solving. In the *conflict resolution* situations, boys used relatively more aggressive strategies (*Ms* = .26, .11, respectively; $p < .10$), and a somewhat greater number of different strategies than girls (*Ms* = .44, .43, respectively; $p < .10$). None of the other *conflict resolution* measures and none of the measures from the *SPSAM* differed significantly by sex.

In contrast, significant differences by grade were found for almost all of the social problem solving measures on both the *conflict resolution* and *SPSAM* interviews. As children matured, they became more assertive and effective in their responses to social problems, with the greatest amount of change generally occurring between kindergarten and second grade. Both types of incompetent responses to social problems, giving up and the use of aggression, declined with age (*ps* < .05), whereas the use of prosocial strategies increased with age (*ps* < .01). Older children also demonstrated more understanding of the problem situations (*interpersonal sensitivity*), were more likely to consider the other's needs, engaged in a greater amount of means-ends thinking, and had more positive outcome expectancies (*ps* < .01). Finally, on the *conflict resolution* measures, there were significant increases with grade in both the number of different strategies used and flexibility of strategy usage ($p < .01$).

Significant sex-by-grade interactions (*p*'s < .01) were found for both of the ratings of overall approach to problem solving on the *SPSAM* but not the *conflict resolution* interview. Between first and third grades, girls increased more than boys in both the assertiveness and the effectiveness of their responses to the problem situations.

It also is interesting to note that children responded differently to the types of problem situations included in the two interviews. In the *conflict resolution* situations, where the focal child's legitimate use of an object had been interfered with by another child, both appealing to an authority and the use of aggression were relatively frequent strategies, and children were less likely to give up and more likely to try another strategy when confronted with an obstacle. In contrast, aggression and appealing to an authority were much less frequent strategies in the less conflictual situations of object acquisition and peer group entry used in the *SPSAM*, whereas giving up was quite frequent in these situations. Prosocial strategies, on the other hand, were mentioned with approximately the same frequency in both types of problem situations.

Relationships Between Social Problem Solving and Social Adjustment

Two sets of analyses were conducted to examine the relationships between children's social adjustment and their social problem solving skills. The first involved correlating social adjustment with social problem solving scores at each grade level. Since the teacher ratings of social adjustment showed quite good temporal stability (correlations over one year averaged .56, $p < .001$; and over five years averaged .29, $p < .05$), and since we were interested in examining longitudinal relationships between social problem solving and adjustment, the fourth-grade teacher ratings were used in these analyses. Table 2 presents the correlations between social adjustment in fourth grade and social problem solving scores, broken down by grade and sex.

Table 2 Here

Relationships between social problem solving scores in kindergarten through fourth grade and fourth-grade social adjustment generally were of low to moderate magnitude and varied considerably by grade. Few of the social problem solving measures showed a consistent pattern of correlations with social adjustment across grade, and in no instance were the correlations statistically significant at more than one or two grade-levels. For example, the use of aggressive strategies at each grade tended to be negatively correlated with teacher ratings of general competence and prosocial behavior, but was less consistently related to teacher ratings of aggressiveness. Interestingly, the correlations with fourth-grade adjustment often appear to be stronger for problem solving in kindergarten through second grade than in third and fourth grades. Overall, however, these correlational analyses do not indicate that social problem solving is strongly or consistently related to teacher judgments of social adjustment.

As a second approach to examining the longitudinal relationships between social problem solving and social adjustment, the teacher ratings were used to classify children into discrete adjustment status groups, roughly corresponding to those identified by Coie, Dodge, and Coppotelli (1982) on the basis of peer nomination data. Specifically, the teacher ratings were standardized within grade, and children were clustered into four groups, defined by the following criteria: *prosocial*, one standard deviation above the mean on prosocial and competent, and one standard deviation below the mean on aggressive; *aggressive*, one standard deviation above the mean on aggressive, and one standard deviation below the mean on prosocial and competent; *withdrawn*, one standard deviation above the mean on withdrawn, and one standard deviation below the mean on competence; and *average*, mean scores on each of the four rating scales.[3]

The clustering yielded groups that differed significantly on the teacher rating scales in ways corresponding to the criterial patterns (*ps* < .001). These differences are shown for the fourth-grade adjustment groups in Figure 1. Somewhat over one-third of the children were classified as average (*n* = 64; 36%) approximately one-quarter each as prosocial (*n* = 44; 25%) and withdrawn (*n* = 41; 23%), and 15 percent (*n* = 27) as aggressive. More girls than boys were classified as prosocial (*n*'s = 28, 18, respectively; 59% vs. 41%), and more boys than girls were classified as aggressive (*n*'s = 16, 11, respectively; 59% vs. 41%).

Figure 1 Here

In addition to the teacher ratings, the four adjustment groups were found to differ significantly on the third-grade peer nominations. Children in the prosocial and average groups scored significantly higher than those in the withdrawn group in the total number of their classmates nominating them at least once, in the number of different roles they were nominated for, and in the number of nominations for the birthday party situation, and children in the prosocial group also received significantly more nominations than those in the withdrawn group as someone others would turn to when they were feeling sad (*ps* < .05). For each of these measures, children in the prosocial group received the largest number of nominations, followed by children in the average, aggressive, and withdrawn groups, respectively.

Mean differences in social problem solving scores by grade, sex, and adjustment group (fourth grade) are summarized in Table 3. A series of mixed-model (adjustment group by sex by grade) analyses of variance for the

measures derived from each of the two interviews indicated a number of significant differences between adjustment groups in social problem solving, all of which involved interactions with grade and/or sex. These effects also are indicated in Table 3.

Table 3 Here

Strategy use. A significant Adjustment Group by Grade interaction was found for the use of aggressive strategies in the *conflict resolution* situations. As illustrated in Figure 2, the use of aggressive strategies decreased with age among children in all four groups. However, this decrease was greatest among aggressive children, who used aggressive strategies much more frequently than children in the other three groups in kindergarten, but not in second or fourth grades. A similar pattern in the use of aggressive strategies was found in the *SPSAM* situations, but the interaction was not statistically significant (p = .12). However, the Adjustment Group by Sex interaction was significant for the *SPSAM*. Although aggressive boys used aggressive strategies more frequently (M = .06) than boys in the other three groups (Ms = .02 - .04), aggressive girls did not use aggressive strategies more frequently (M = .02) than girls in the prosocial (M = .04) or average groups (M = .03). Instead, it was withdrawn girls who showed the highest use of aggressive strategies in the *SPSAM* situations (M = .08).

Figure 2 Here

Significant Adjustment Group by Sex by Grade interactions were found for the use of prosocial strategies in both the *conflict resolution* and *SPSAM* situations. This interaction is shown for the use of prosocial strategies on the *SPSAM* in Figures 3a and 3b. Children in all four adjustment groups increased in the use of prosocial strategies between first and third grades. Among girls, these increases are greatest for those in the aggressive and withdrawn groups, who used prosocial strategies more than girls in either the average or prosocial groups in third grade. Among boys, on the other hand, the use of prosocial strategies between first and third grades showed less of an increase in the aggressive group than the prosocial group, and actually decreased in the withdrawn group. A similar pattern was found for the use of prosocial strategies in the *conflict resolution* situations, except that withdrawn boys showed increased rather than decreased use of prosocial strategies between kindergarten and fourth grade.

Figures 3a and 3b Here

Finally, in the *SPSAM* situations, a significant Adjustment Group by Grade interaction was found for the number of different strategies used, and a significant Adjustment Group by Sex by Grade interaction was found for flexibility of strategy use. Between first and third grades, children in the prosocial and average groups increased in the number of different strategies used in the problem situations, whereas those in the aggressive and withdrawn groups used fewer different strategies in third grade than in first grade. A similar pattern (not statistically significant) was found for responses to the *conflict resolution* situations, except that only children in the aggressive

group decreased in the number of different strategies used over time. With respect to flexibility, girls increased and boys decreased in flexibility between first and third grade in all groups except the average group, where both girls and boys decreased in flexibility.

Ratings of overall approach to problem solving. A significant Adjustment Group by Grade interaction was found for ratings of assertiveness in the *conflict resolution* situations. As shown in Figure 4, children in the prosocial and average groups were increasingly assertive in their approach to problem solving between kindergarten and fourth grades. In contrast, aggressive children showed decreasing assertiveness over time, while withdrawn children increased in assertiveness between kindergarten and second grade, and then declined between second and fourth grades. Although not statistically significant, a similar pattern was observed for responses to the *SPSAM* situations for children in the prosocial and aggressive groups. Children in the average and withdrawn groups, however, did not vary by grade in ratings of assertiveness of responses to the *SPSAM* situations.

Figure 4 Here

With respect to ratings of the overall effectiveness of problem solving, a significant Adjustment Group by Sex by Grade interaction was found for responses in the *SPSAM* situations. This is shown in Figures 5a and 5b. Girls in all four groups were rated as being more effective in the problem situations in third grade than in first grade. Among boys, however, this was true only for the prosocial, aggressive, and average groups; withdrawn boys were rated as

being less effective at problem solving in third grade than in first grade. Similar differences between adjustment groups were not found for ratings of effectiveness of problem solving in the *conflict resolution* situations.

Figures 5a and 5b Here

Cognitive processing. No significant differences between children in the four adjustment groups were found for consideration of other's needs, interpersonal sensitivity, means-ends thinking, or outcome expectancy.

Discussion

The purpose of this study was to examine normative developmental changes in children's social problem solving skills, and to investigate the relationships between problem solving and children's social adjustment over time. The findings indicate that between kindergarten and fourth grade, children of both sexes become increasingly skilled at solving common interpersonal problems, at least as assessed through hypothetical-reflective interviews, with the greatest amount of change generally occurring between kindergarten and second grade. Compared to their responses in kindergarten, children become increasingly assertive and effective in their problem solving responses, relying more on prosocial strategies (e.g., cooperation, compromise) and less on aggressive strategies or giving up when faced with an interpersonal problem. They also increase in the range of responses they apply in problem situations and in their ability to respond with a new and different strategy when their initial attempts to solve problems meet with an obstacle. Finally, with age, children improve in their understanding of problem situations and the consequences of various actions, are more likely to interpret the situations in terms of the

needs and feelings of those involved and to consider these multiple perspectives in attempting to solve the problem, and expect greater success from their attempts to solve problems.

The findings are less clear with respect to the relationships between social problem solving and social adjustment. Correlational analyses revealed few significant relationships between the measures of children's social problem solving and teacher ratings of social adjustment in fourth grade, and few consistent patterns of relationships between problem solving at different ages and adjustment. We had somewhat more success at discriminating groups of children with different patterns of adjustment (i.e., prosocial, aggressive, withdrawn, and average) on the basis of their social problem solving scores. Even here, however, the differences in social problem solving between children with different patterns of adjustment in fourth grade invariably differed by grade and/or sex. Aggressive children, for example, showed the most frequent use of aggressive strategies to solve social problems of any of the groups in kindergarten. Over time, however, aggressive children decreased in their use of aggressive strategies, so that they did not differ from prosocial or average children in the use of aggressive strategies after first grade. Interestingly, withdrawn girls (but not boys) actually showed an increase in the use of aggressive strategies from kindergarten through second grade, but then decreased thereafter. Similarly complex patterns of differences were observed for the use of prosocial strategies, the number of different strategies used, and the rated assertiveness and effectiveness of children's problem solving strategies. Although questions might be raised about the stability or generalizability of these interactions, the same patterns of response typically

were found using measures from two different hypothetical-reflective interviews, providing some evidence for their reliability, at least among the present sample.

It is noteworthy that children's social adjustment in fourth grade was more strongly related to their social problem solving skills in the *early* elementary grades (kindergarten through second grade) than in the later grades. Most of the previous studies that have reported significant relationships between problem solving skills and adjustment were conducted with children of preschool or early elementary age (e.g., Spivack & Shure, 1974; Spivack, Platt, & Shure, 1976). The findings from studies among older children have been quite mixed; training in problem solving skills has not been found to consistently produce significant improvements in social adjustment (see Rubin & Krasnor, 1986; Urbain & Kendall, 1980).

The present findings may help to account for these inconsistencies. Aggressive and withdrawn children in this sample were less competent than their average and prosocial peers in their responses to hypothethical problem situations in the early elementary grades. However, *all* children showed improvements in problem solving with age, with aggressive and withdrawn children improving the most, so that by the later elementary grades they did not differ from their more competent peers in their responses to *hypothetical* problems. Similar findings of significant relationships between adjustment and hypothetical-reflective problem solving in preschool and kindergarten that disappeared in later grades have been reported by others (e.g., Rubin & Daniels-Beirness, 1983; Rubin & Krasnor, 1986). Among young children, problems in behavioral adjustment often may reflect deficits in social knowledge or skill. However, the increases in social understanding and reasoning skills

that occur with age may not necessarily lead to changes in social behavior. In hypothetical situations where they have little affective involvement and considerable time to reflect on their responses, even aggressive and withdrawn children may display quite sophisticated and prosocial approaches to solving problems. In real-life problems, on the other hand, where considerable negative affect is likely to be involved and there is a press for immediate action, these same children may respond much less competently.

It also is possible that aggressive and withdrawn children's interactions with their peers reinforce their incompetent behavior, despite improvements in cognitive problem solving skills. Aggressive children, for example, have been found to expect others to act toward them in a negative way, and hence are more likely than their more competent peers to respond to any provocation with retaliatory aggression, even when the actor's intentions are ambiguous (e.g., Dodge, 1986). Such reactions, while seen as a reasonable response by the child, are likely to exacerbate the situation and lead peers to avoid interacting with him or her, decreasing the probability that the child's future attempts to engage in positive interactions with peers will be effective. Additional research of this kind is needed to understand the manner in which children's global adjustment status results from, and is reflected in, their patterns of peer interaction.

Footnotes

[1]See Battistich, Solomon, Watson, Solomon, & Schaps (in press) for a description of the effects of the intervention program on children's social problem solving skills.

[2]An additional rating of the extent to which the child's approach to the problem situation enhanced the relationship between actor and other was highly correlated with the use of prosocial strategies, and consequently was dropped from the analyses.

[3]Teacher ratings of general competence were positively correlated with ratings of prosocial behavior (r = .48, p < .0001) and negatively correlated with ratings of withdrawal and aggression (rs = -.36, -.14, respectively; ps < .001). The criteria for the clustering reflected this pattern of covariation. Likewise, ratings of prosocial behavior and aggression were strongly negatively intercorrelated (r = -.59, p < .0001). Ratings of withdrawal were unrelated to ratings of prosocial behavior (r = .02), but were negatively correlated with ratings of aggression (r = -.18, p < .001).

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Table 2

Correlations Between Teacher Ratings of Adjustment in Fourth Grade and Social Problem Solving by Sex and Grade

		Teacher Rating							
		Girls				Boys			
Variable	Grade	Pro-social	Agg-ressive	With-drawn	Com-petent	Pro-social	Agg-ressive	With-drawn	Com-petent
Strategy Use									
Give Up	K	.10	-.25	.32*	-.10	-.07	-.00	.01	-.03
	1	-.16	.00	.14	-.09	-.07	.05	-.13	.08
	2	.02	-.03	-.00	.00	.07	.03	-.30*	.31**
	3	-.09	.01	.01	-.02	-.12	.18	-.00	-.12
	4	-.12	.06	-.04	-.11	.26*	-.21*	-.11	.14
Aggression	K	-.26*	.33*	-.04	-.28*	-.12	.06	.02	-.14
	1	-.08	.18	.07	-.20	-.19	.16	.16	-.37**
	2	-.06	.09	.16	-.36**	-.06	-.01	.06	-.12
	3	.14	-.13	-.09	.03	-.08	-.05	.08	-.16
	4	-.17	.15	-.10	.00	-.00	-.12	.13	-.12
Appeal to Authority	K	.15	-.15	-.01	.20	.00	.04	.09	-.13
	1	.05	.01	-.03	-.01	.08	-.03	.10	.00
	2	-.14	-.04	.36**	-.17	.01	-.04	.19	-.16
	3	.23*	-.15	-.07	.10	-.07	-.00	.05	-.01
	4	.01	.01	.04	.00	.04	-.06	.07	.03
Prosocial	K	-.00	.10	-.28*	.18	.25	-.11	-.11	.32*
	1	.20	-.09	-.18	.20	.11	-.11	.01	.06
	2	.14	.00	-.39**	.34**	-.00	.01	.03	-.01
	3	-.10	.14	.08	-.04	.22*	-.17	-.07	.24*
	4	.19*	-.14	.06	.09	-.21*	.28**	-.06	-.03
No. of Different Resolutions	K	-.10	.27*	-.38*	.09	.12	-.03	.12	.06
	1	-.05	.07	.10	-.13	-.16	.10	.29*	-.47**
	2	-.08	.01	.15	-.14	-.08	.01	.09	-.15
	3	.30*	-.19	-.08	.10	-.08	.04	.09	-.10
	4	-.11	.15	.00	.03	-.02	.11	-.03	.05
Flexibility	K	-.10	.30*	-.33*	.06	.05	-.00	-.07	.08
	1	.17	-.04	-.15	.08	.01	.03	.14	-.02
	2	-.00	.07	.03	.00	-.08	-.02	.22*	-.23*
	3	.02	.03	.14	-.10	-.00	-.10	.08	-.05
	4	.11	-.03	.05	.08	-.14	.18	.04	-.04

Table 2 (cont)

Variable	Grade	Teacher Rating: Girls Pro-social	Girls Aggressive	Girls Withdrawn	Girls Competent	Boys Pro-social	Boys Aggressive	Boys Withdrawn	Boys Competent
Ratings of Overall Approach									
Assertiveness	K	-.22	.37*	-.24	-.09	-.04	.05	.01	-.09
	1	.11	.05	-.09	.01	-.01	.01	.17	-.20
	2	-.09	.06	.19	-.28*	-.08	-.03	.22+	-.26*
	3	.14	-.07	-.05	.02	.05	-.15	.03	.01
	4	-.00	.04	-.01	.07	-.13	.01	.16	-.15
Effectiveness	K	-.04	.17	-.32*	.17	.12	.01	-.08	.12
	1	.19	-.06	-.17	.16	.12	-.10	.08	-.00
	2	.03	-.04	-.01	.08	-.05	-.02	.28*	-.28*
	3	.00	.05	.05	-.01	.18	-.16	-.03	.20+
	4	.16	-.08	.08	.07	-.26*	.27*	.05	-.08
Cognitive Processing									
Consideration of Other's Needs	K	.24	-.15	-.10	.07	-.08	.10	-.31	.22
	1								
	2	.30	-.13	-.22	.23+	.02	.03	-.14	.08
	3								
	4	.10	.02	.01	-.15	.12	-.07	-.12	.08
Interpersonal Sensitivity	K								
	1	.09	-.17	-.08	.19	.12	-.03	-.06	.16
	2								
	3	-.02	.24+	-.22+	-.02	-.05	.15	-.07	.06
	4								
Means-Ends Thinking	K								
	1	-.05	.13	.06	-.25+	.17	-.08	.05	.10
	2								
	3	.14	.02	-.27*	.10	.16	-.13	-.19	.18
	4								
Outcome Expectancy	K								
	1	-.00	.07	.01	-.07	-.10	-.00	.14	-.01
	2								
	3	.09	.12	-.07	.04	.02	-.06	-.22+	.16
	4								

Note. All measures are standardized within grade and sex.

+$p < .10$ *$p < .05$ **$p < .01$ two-tailed

Table 3

Mean Social Problem Solving Scores by Grade, Sex, and Adjustment Group at Fourth Grade

Variable	Group	Conflict Resolution K	Conflict Resolution 2	Conflict Resolution 4	*F* Group G x G S x G SxGxG	SPSAM 1	SPSAM 3	*F* Group G x G S x G SxGxG
Strategy Use								
Give Up	Prosocial				*<1*			*<1*
	Girls	.38	.14	.16	*<1*	.55	.39	*<1*
	Boys	.38	.22	.19	*1.31*	.49	.39	*<1*
	Both	.38	.17	.17	*<1*	.52	.39	*2.03*
	Aggressive							
	Girls	.22	.05	.16		.60	.38	
	Boys	.22	.16	.11		.48	.56	
	Both	.22	.11	.13		.52	.51	
	Withdrawn							
	Girls	.55	.19	.16		.54	.29	
	Boys	.20	.08	.08		.39	.60	
	Both	.41	.15	.13		.47	.45	
	Average							
	Girls	.44	.17	.13		.50	.41	
	Boys	.39	.19	.18		.48	.51	
	Both	.41	.18	.16		.49	.47	
Aggression	Prosocial				*<1*			*<1*
	Girls	.10	.05	.07	*2.03+*	.02	.06	*2.00*
	Boys	.13	.20	.12	*<1*	.02	.04	*2.22+*
	Both	.12	.12	.09	*1.56*	.02	.05	*<1*
	Aggressive							
	Girls	.38	.05	.05		.04	.00	
	Boys	.33	.22	.00		.11	.01	
	Both	.36	.13	.02		.09	.01	
	Withdrawn							
	Girls	.05	.19	.05		.10	.05	
	Boys	.37	.24	.08		.03	.00	
	Both	.18	.21	.06		.06	.02	
	Average							
	Girls	.15	.13	.05		.01	.04	
	Boys	.19	.08	.07		.05	.02	
	Both	.17	.10	.06		.04	.03	

Table 3 (cont.)

Variable	Group	Conflict Resolution K	2	4	*F* Group G x G S x G SxGxG	SPSAM 1	3	*F* Group G x G S x G SxGxG
Appeal to Authority	Prosocial				*<1*			*<1*
	Girls	.25	.22	.19	*1.19*	.05	.06	*<1*
	Boys	.16	.23	.27	*<1*	.10	.02	*<1*
	Both	.21	.23	.23	*1.34*	.08	.04	*<1*
	Aggressive							
	Girls	.16	.33	.16		.04	.00	
	Boys	.22	.27	.05		.08	.00	
	Both	.19	.30	.11		.07	.00	
	Withdrawn							
	Girls	.30	.38	.16		.07	.03	
	Boys	.08	.25	.16		.09	.01	
	Both	.21	.33	.16		.08	.02	
	Average							
	Girls	.14	.24	.22		.06	.04	
	Boys	.23	.21	.19		.03	.04	
	Both	.19	.23	.20		.04	.04	
Prosocial	Prosocial				*<1*			*<1*
	Girls	.26	.57	.57	*1.95+*	.36	.47	*1.49*
	Boys	.30	.33	.40	*1.98*	.38	.54	*<1*
	Both	.28	.46	.49	*1.85+*	.37	.51	*3.44**
	Aggressive							
	Girls	.22	.55	.61		.30	.61	
	Boys	.22	.33	.83		.31	.41	
	Both	.22	.44	.72		.31	.47	
	Withdrawn							
	Girls	.08	.22	.61		.26	.60	
	Boys	.33	.41	.66		.48	.37	
	Both	.18	.30	.63		.37	.49	
	Average							
	Girls	.26	.44	.58		.41	.49	
	Boys	.17	.49	.53		.42	.41	
	Both	.21	.47	.55		.41	.44	

Table 3 (cont.)

Variable	Group	Conflict Resolution K	2	4	*F* Group G x G S x G SxGxG	SPSAM 1	3	*F* Group G x G S x G SxGxG
No. of Different Strategies	Prosocial				*1.00*			*3.02**
	Girls	.36	.41	.48	*1.16*	.37	.44	*4.30***
	Boys	.37	.47	.50	*1.92*	.36	.37	*2.60**
	Both	.37	.44	.49	*<1*	.36	.41	*<1*
	Aggressive							
	Girls	.50	.44	.50		.40	.33	
	Boys	.50	.49	.38		.47	.34	
	Both	.50	.47	.44		.45	.34	
	Withdrawn							
	Girls	.25	.38	.47		.41	.40	
	Boys	.54	.58	.54		.45	.38	
	Both	.36	.46	.50		.43	.39	
	Average							
	Girls	.35	.44	.39		.30	.37	
	Boys	.39	.46	.44		.36	.39	
	Both	.37	.45	.41		.33	.38	
Flexibility	Prosocial				*<1*			*<1*
	Girls	.33	.59	.64	*<1*	.21	.23	*<1*
	Boys	.36	.58	.58	*1.17*	.23	.18	*1.34*
	Both	.34	.58	.61	*<1*	.22	.20	*2.91**
	Aggressive							
	Girls	.44	.88	.55		.08	.50	
	Boys	.66	.66	.55		.25	.03	
	Both	.55	.77	.55		.20	.17	
	Withdrawn							
	Girls	.11	.50	.61		.17	.42	
	Boys	.58	.75	.66		.28	.10	
	Both	.30	.60	.63		.23	.26	
	Average							
	Girls	.30	.59	.61		.17	.10	
	Boys	.33	.52	.54		.22	.20	
	Both	.32	.55	.58		.20	.16	

Table 3 (cont.)

Variable	Group	Conflict Resolution K	2	4	*F* Group G x G S x G SxGxG	SPSAM 1	3	*F* Group G x G S x G SxGxG
Ratings of Overall Approach								
Assertiveness	Prosocial				*1.15*			*<1*
	Girls	.48	.53	.52	*1.90~*	.38	.45	*1.63*
	Boys	.48	.57	.55	*<1*	.40	.44	*<1*
	Both	.48	.55	.54	*1.17*	.39	.45	*1.09*
	Aggressive							
	Girls	.64	.57	.51		.37	.43	
	Boys	.62	.60	.50		.44	.38	
	Both	.63	.59	.51		.42	.39	
	Withdrawn							
	Girls	.40	.59	.51		.41	.49	
	Boys	.63	.64	.55		.44	.35	
	Both	.49	.61	.53		.42	.42	
	Average							
	Girls	.46	.55	.54		.39	.43	
	Boys	.51	.52	.52		.42	.39	
	Both	.49	.54	.53		.41	.41	
Effectiveness	Prosocial				*<1*			*<1*
	Girls	.50	.65	.63	*<1*	.44	.52	*1.00*
	Boys	.49	.56	.59	*1.51*	.46	.54	*<1*
	Both	.50	.61	.61	*<1*	.45	.53	*3.47~*
	Aggressive							
	Girls	.53	.67	.61		.40	.55	
	Boys	.54	.60	.69		.44	.46	
	Both	.53	.63	.65		.43	.49	
	Withdrawn							
	Girls	.41	.58	.64		.40	.59	
	Boys	.54	.62	.67		.52	.43	
	Both	.46	.60	.65		.46	.51	
	Average							
	Girls	.46	.61	.64		.47	.51	
	Boys	.48	.60	.60		.47	.47	
	Both	.47	.61	.62		.47	.48	

Table 3 (cont.)

Variable	Group	Conflict Resolution K	2	4	F Group G x G S x G SxGxG	SPSAM 1	3	F Group G x G S x G SxGxG
Cognitive Processing								
Consideration of Other's Needs	Prosocial				*1.00*			
	Girls	.16	.16	.21	*<1*			
	Boys	.16	.08	.20	*1.09*			
	Both	.16	.12	.21	*<1*			
	Aggressive							
	Girls	.00	.11	.00				
	Boys	.11	.16	.33				
	Both	.05	.13	.16				
	Withdrawn							
	Girls	.05	.02	.19				
	Boys	.00	.04	.20				
	Both	.03	.03	.19				
	Average							
	Girls	.09	.11	.11				
	Boys	.15	.11	.18				
	Both	.12	.11	.15				
Interpersonal Sensitivity	Prosocial							*<1*
	Girls					.39	.50	*<1*
	Boys					.37	.43	*<1*
	Both					.38	.46	*1.56*
	Aggressive							
	Girls					.37	.55	
	Boys					.38	.44	
	Both					.38	.47	
	Withdrawn							
	Girls					.31	.47	
	Boys					.38	.46	
	Both					.34	.46	
	Average							
	Girls					.40	.42	
	Boys					.34	.47	
	Both					.36	.45	

Table 3 (cont.)

Variable	Group	Conflict Resolution K	2	4	F Group G x G S x G SxGxG	SPSAM 1	3	F Group G x G S x G SxGxG
Means-Ends Thinking	Prosocial							<1
	Girls					.04	.11	1.13
	Boys					.05	.10	<1
	Both					.04	.10	<1
	Aggressive							
	Girls					.06	.10	
	Boys					.03	.06	
	Both					.04	.07	
	Withdrawn							
	Girls					.08	.06	
	Boys					.03	.05	
	Both					.06	.06	
	Average							
	Girls					.02	.08	
	Boys					.04	.06	
	Both					.03	.07	
Outcome Expectancy	Prosocial							<1
	Girls					.64	.84	1.28
	Boys					.70	.81	<1
	Both					.67	.82	<1
	Aggressive							
	Girls					.73	.81	
	Boys					.67	.81	
	Both					.69	.81	
	Withdrawn							
	Girls					.75	.75	
	Boys					.78	.81	
	Both					.77	.78	
	Average							
	Girls					.66	.91	
	Boys					.68	.76	
	Both					.67	.82	

*$p < .10$ **$p < .05$ ***$p < .01$

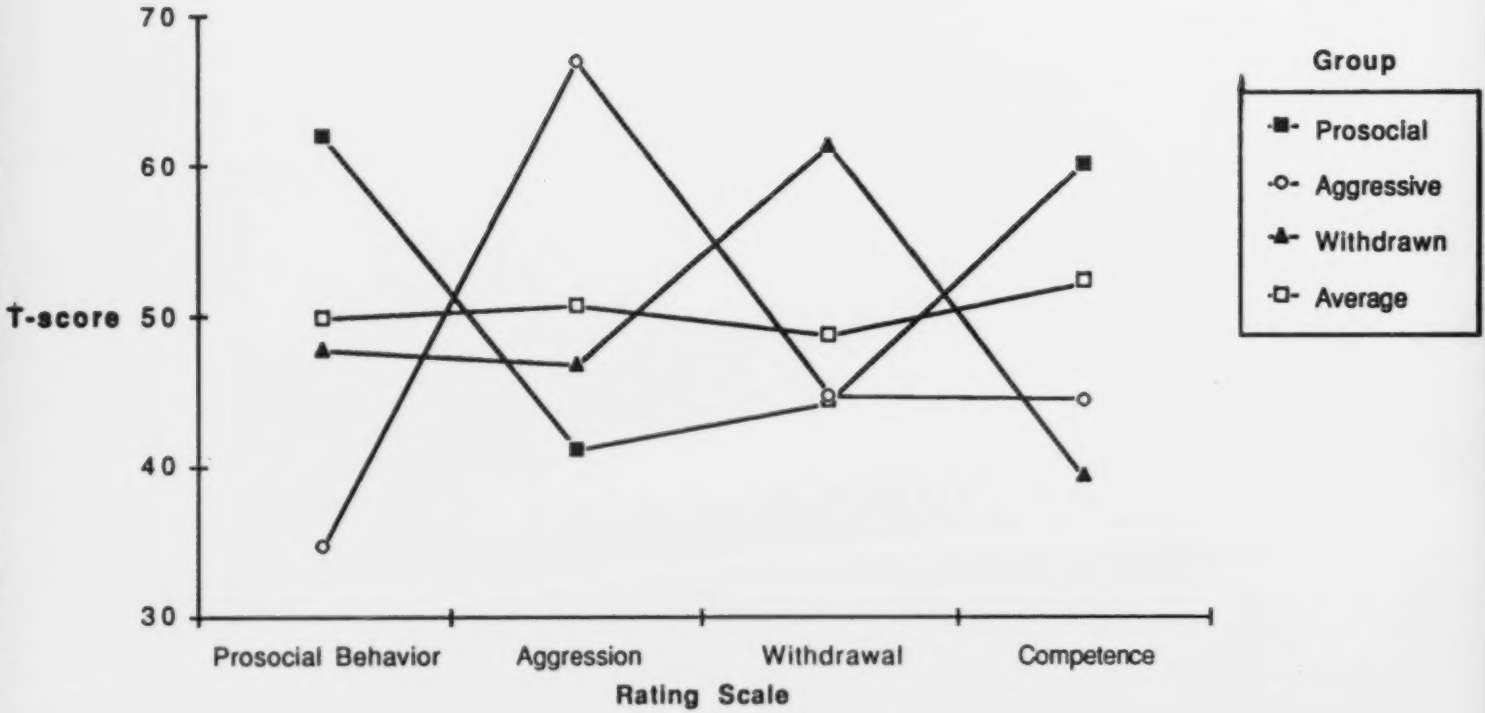

Figure 1. Mean Teacher Rating Scores of Children in Four Adjustment Groups

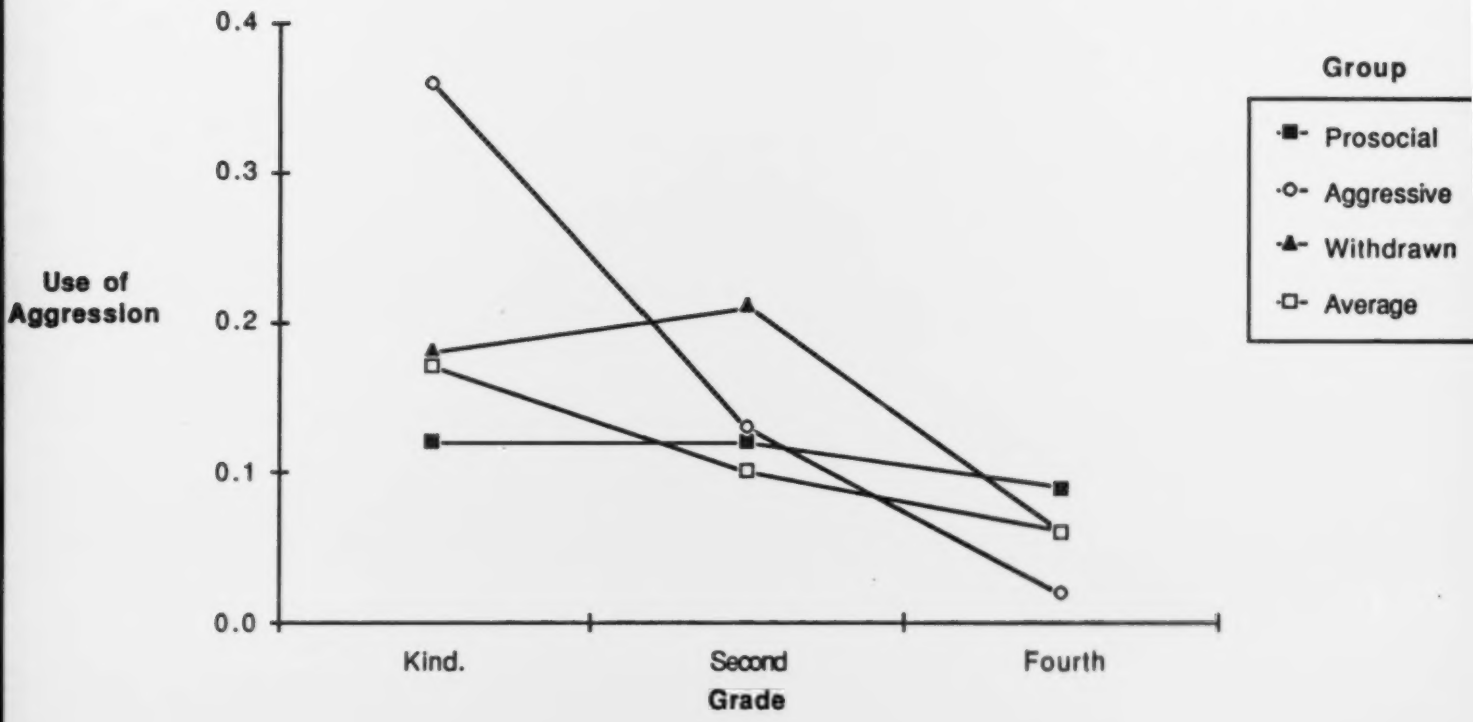

Figure 2. Use of Aggressive Strategies by Grade and Adjustment Group

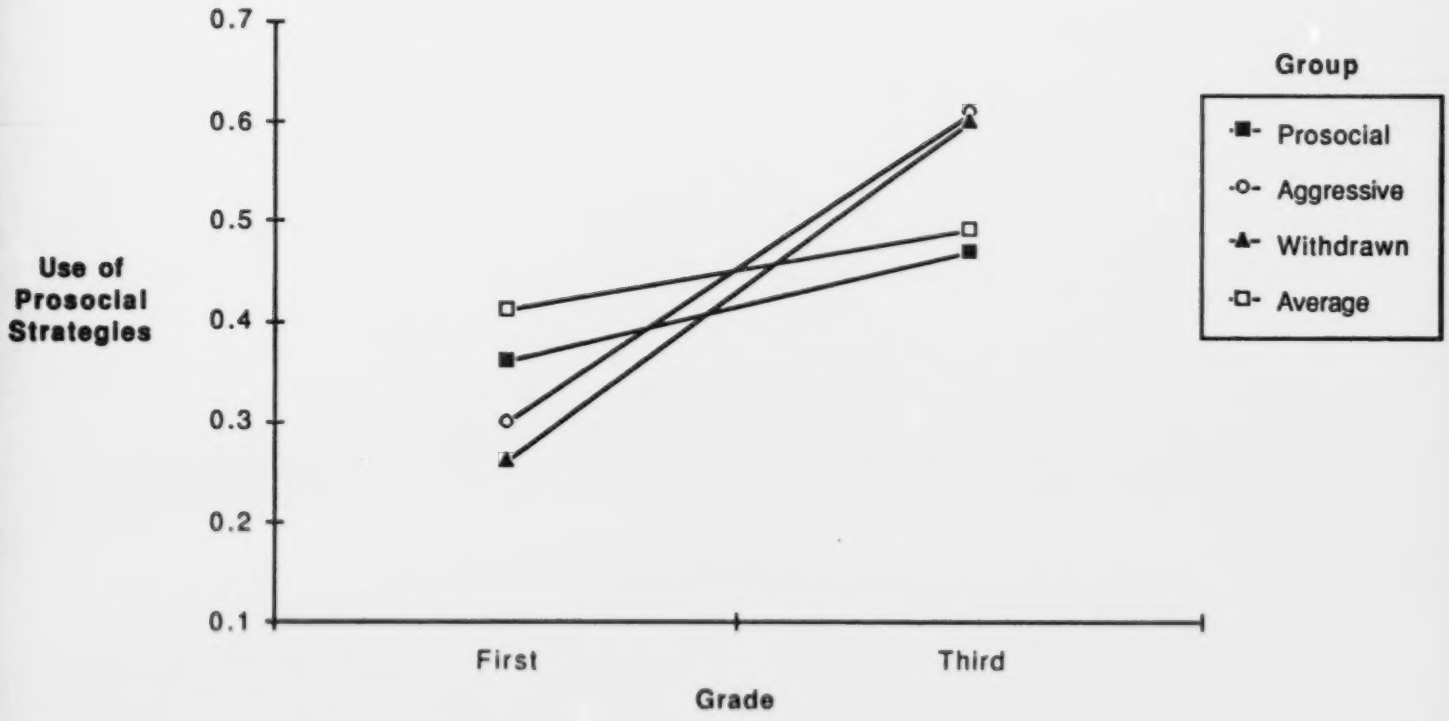

Figure 3a. Use of Prosocial Strategies by Grade and Adjustment Group for Girls

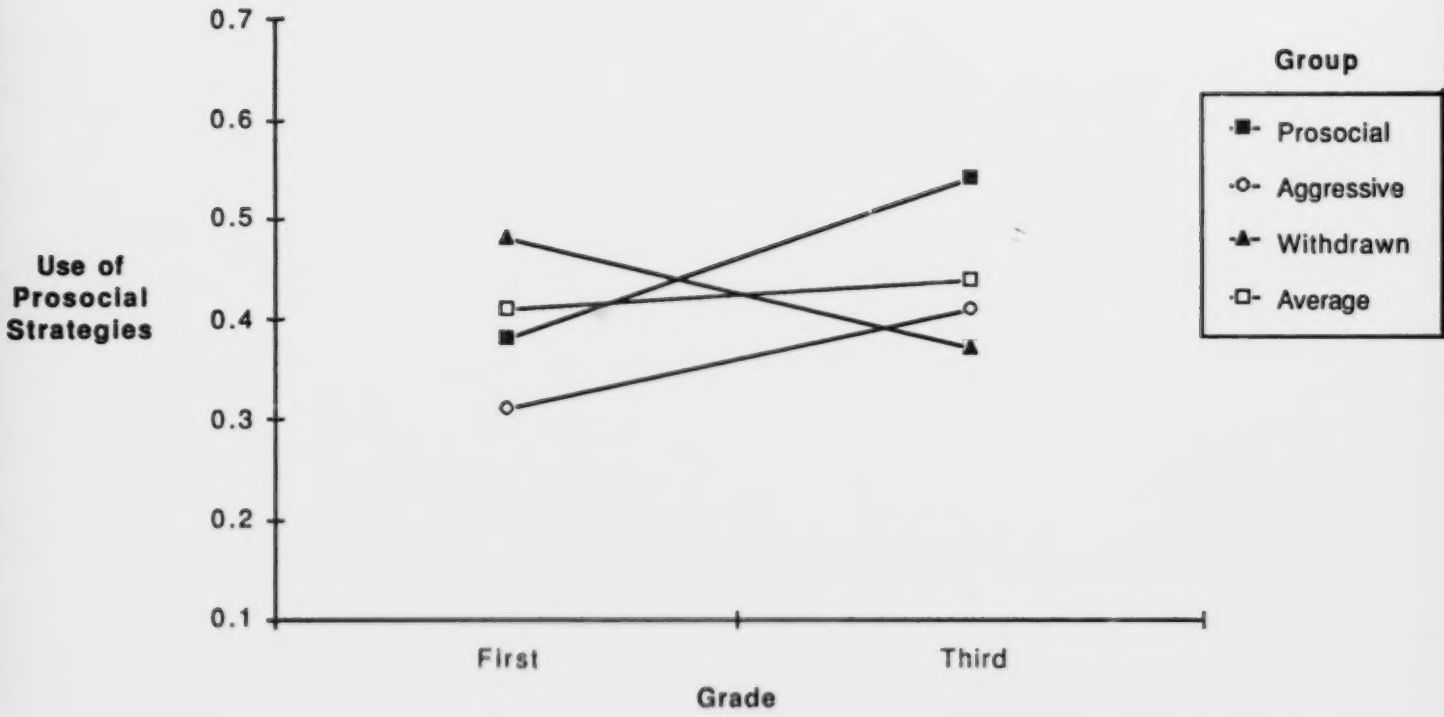

Figure 3b. Use of Prosocial Strategies by Grade and Adjustment Group for Boys

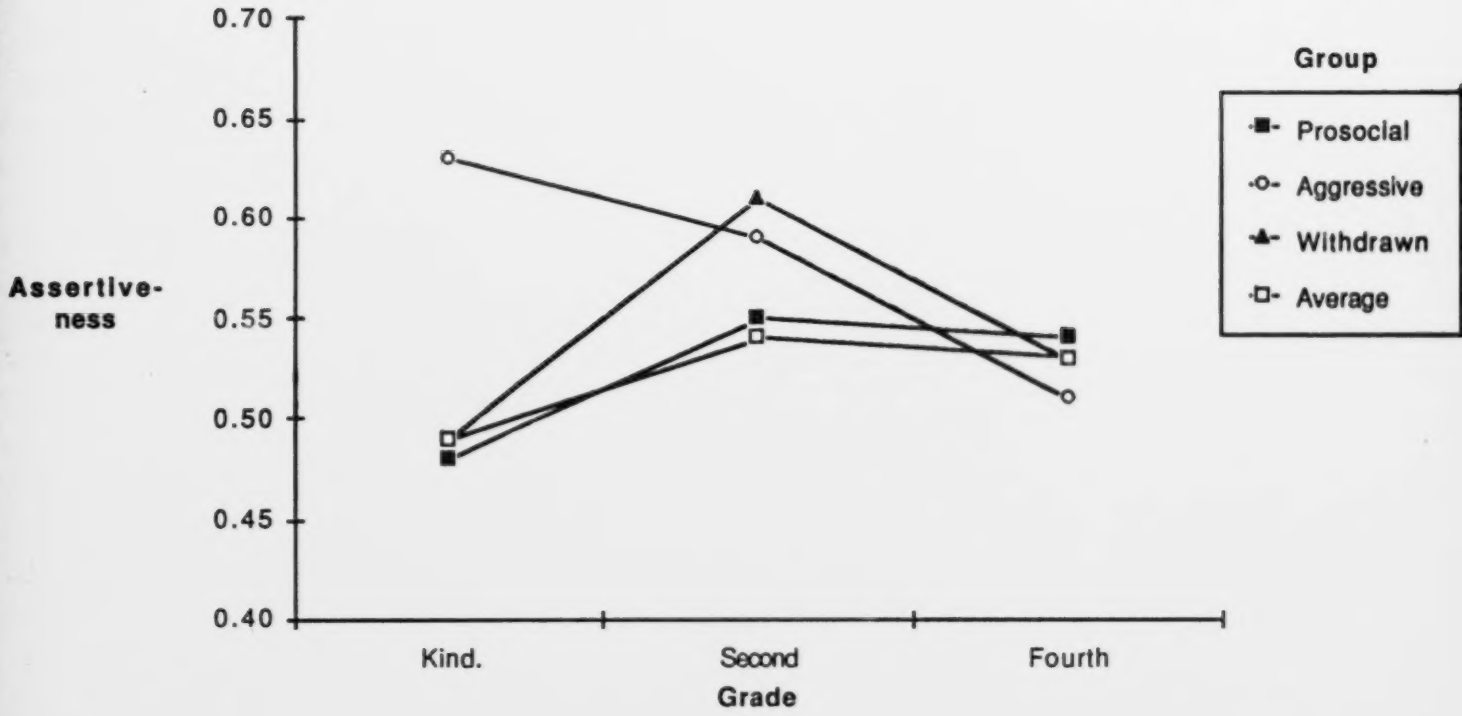

Figure 4. Assertiveness of Approach to Problem Solving by Grade and Adjustment Group

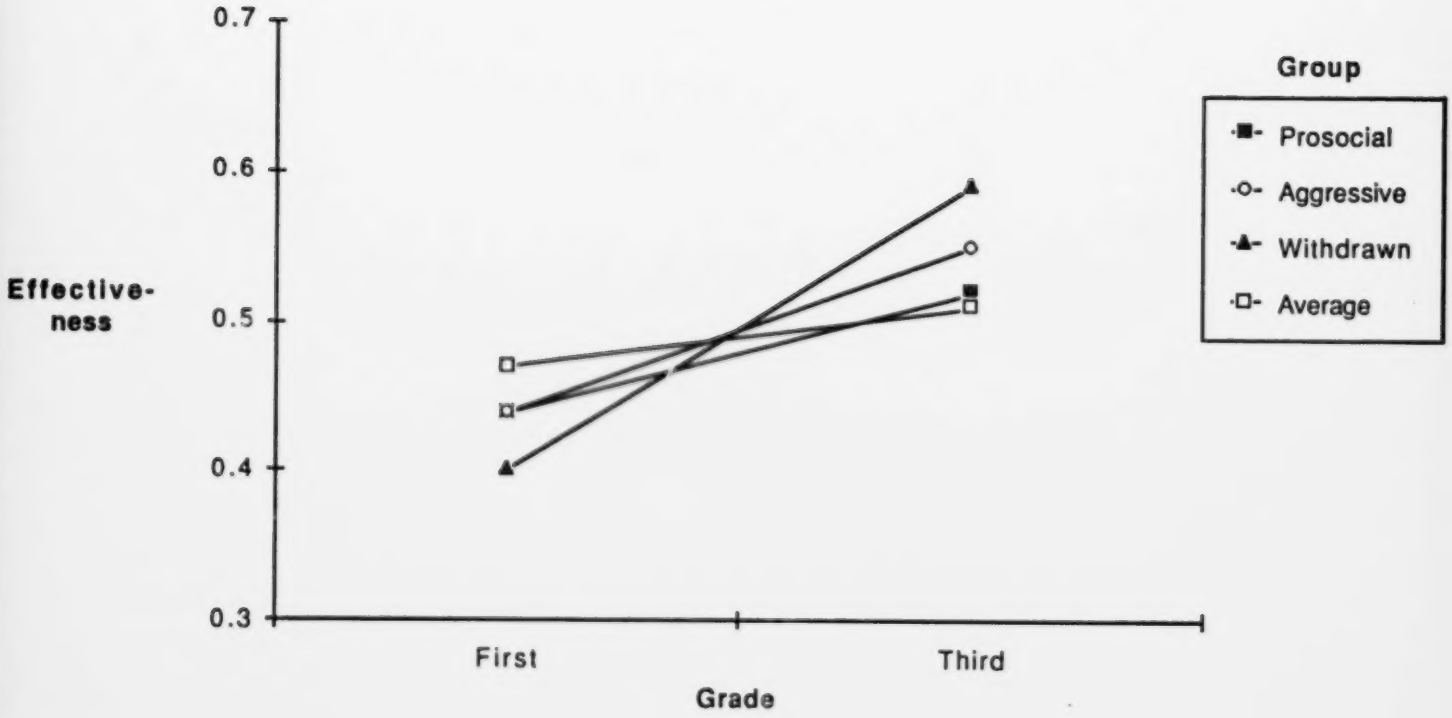

Figure 5a. Effectiveness of Problem Solving by Grade and Adjustment Group for Girls

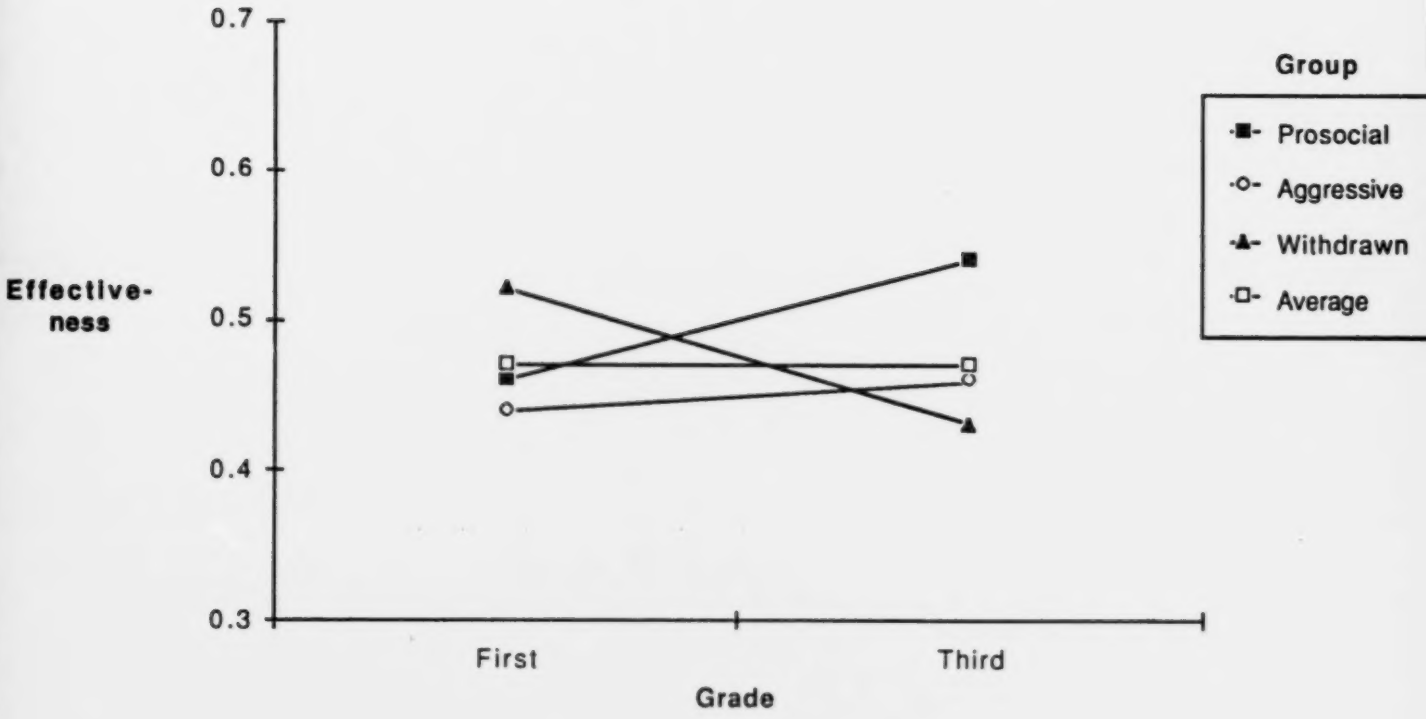

Figure 5b. Effectiveness of Problem Solving by Grade and Adjustment Group for Boys